

# STRUCTURE AND METHOD FOR METAL REPLACEMENT GATE OF HIGH PERFORMANCE

## Abstract

A structure and method for a metal replacement gate of a high performance device is provided. A sacrificial gate structure is first formed on an etch stop layer provided on a semiconductor substrate. A pair of spacers is provided on sidewalls of the sacrificial gate structure. The sacrificial gate structure is then removed, forming an opening. Subsequently, a metal gate including an first layer of metal such as tungsten, a diffusion barrier such as titanium nitride, and a second layer of metal such as tungsten is formed in the opening between the spacers.